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NOTICE OF ALLOWANCE AND FEE(S) DUE

55589 7590 12/08/2009

FLEIT, GIBBONS, GUTMAN, BONGINI & BIANCO P.L.
551 NW 77TH STREET
SUITE 111
BOCA RATON, FL 33487

EXAMINER

LEE, JOHN W

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 12/08/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/788,639

02/27/2004

Per-Ola Kristensson

ARC920040008US1

7219

TITLE OF INVENTION: SYSTEM AND METHOD FOR RECOGNIZING WORD PATTERNS IN A VERY LARGE VOCABULARY BASED ON A VIRTUAL KEYBOARD LAYOUT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/08/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

55589 7590 12/08/2009

FLEIT, GIBBONS, GUTMAN, BONGINI & BIANCO P.L
551 NW 77TH STREET
SUITE 111
BOCA RATON, FL 33487

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/788,639 02/27/2004 Per-Ola Kristensson ARC920040008US1 7219

TITLE OF INVENTION: SYSTEM AND METHOD FOR RECOGNIZING WORD PATTERNS IN A VERY LARGE VOCABULARY BASED ON A VIRTUAL KEYBOARD LAYOUT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1510 \$300 \$0 \$1810 03/08/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
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LEE, JOHN W 2624 382-187000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,639	02/27/2004	Per-Ola Kristensson	ARC920040008US1	7219
55589	7590	12/08/2009	EXAMINER	
FLEIT, GIBBONS, GUTMAN, BONGINI & BIANCO P.L. 551 NW 77TH STREET SUITE 111 BOCA RATON, FL 33487			LEE, JOHN W	
			ART UNIT	PAPER NUMBER
			2624	
DATE MAILED: 12/08/2009				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 778 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 778 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/788,639	KRISTENSSON ET AL.	
	Examiner	Art Unit	
	JOHN Wahnkyo LEE	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12 September 2009.
2. ☒ The allowed claim(s) is/are 1-2, 4-6, 8, 11-12, 14, 17-19, 21-23, 27-28, 30, 32, 35, 43-44 and 49-65 (Now, renumber as claims 1-39).
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|--|---|

/John Wahnkyo Lee/
Examiner, Art Unit 2624

DETAILED ACTION

- The application was forwarded to the examiner on 12 September 2009.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael Zazzara on 11 November 2009.

Please amend the claims as follows:

In claim 1, line 1, delete [;] and insert -- coupled to a computer, the computer programmed to perform the steps of: -- after "a virtual keyboard"

In claim 49, line 1, insert -- using a computer to perform the steps of: -- after "comprising:"

Please delete claims 37-38 and 45-48.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: The application has features recited in the claims such as "mathematically integrating, using Bayes' theorem, the probability estimates of the plurality of channels to produce integrated probability estimates of candidate words corresponding to the stroke", "a computer for producing a probability estimate of a candidate word, wherein the

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computer produces the probability estimate of the candidate word by first serially applying the output of each channel of the plurality of channels alone and separately, and if a recognized word cannot be identified from the output of any one channel, then the computer mathematically integrates outputs of at least two channels of the plurality of channels to produce an integrated probability estimate of the candidate word” and “calculating a total normative time of inputting the stroke for each word i , as follows:

$$t_n(i) = na + b \sum_{k=1}^{n-1} \log_2 \left(\frac{D_{k,k+1}}{W} + 1 \right)$$

where $D_{k,k+1}$ is a distance between the k^{th} and the $(k+1)^{th}$ letters of word i on the keyboard; W is a key width, n is a number of letters in the word; and a and b are two constants in Fitts' law, calculating a total normative time of inputting the stroke for all words of a gesture production, as follows:

$$t_a = \sum t_n(i)$$

and if $t_a \leq t_n(i)$, then a ratio $t_n(i)/t_a$ is used to adjust distribution of the probability estimates so as to lower the weight of the location channel,” which are distinct comparing with the reference searched and cited by the examiner in the PTO-892 form.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

3. Claims 1-2, 4-6, 8, 11-12, 14, 17-19, 21-23, 30, 32, 35, 43-44 and 49-65 are allowed.

4. The prior art made of record is considered pertinent to the disclosure of the application:

- Carmen, II (US 5,454,046): A universal symbolic handwriting recognition system or converting user entered time ordered stroke sequences into computer readable text is described. The system operates on two levels: (1) a word-level recognizer, which recognizes the entire group of strokes as a unit, and (2) a parser-level recognizer, which breaks the strokes into segments and recognizes groups of stroke segments within a word, thus recognizing separate characters or character sequences within a word to build a complete recognition string. In both recognition levels, the system trains on actual user samples, either on an entire word, or on a character or character sequence within a word. It does so by building a user specific sample recognition data-base file of text/pattern pairs, where the text is specified by the user in a word confirmation process and the pattern, composed of an index and a feature vector, is created from the actual user input strokes. Thus, as the user continues to use the recognition system and augments his/her user specific sample recognition data-base file, the correct recognition rate climbs approaching 100 percent in normal usage. The word-level recognizer can also be used to train on abbreviations, custom shorthands, and pictographic characters, such as the Japanese Kanji, or Chinese. An abbreviated

Japanese Kanji or Chinese handwritten entry can even be trained for recognition.

The text in the user specific sample data-base file is maintained in the Unicode format, and the user can specify the recognized return string format as either Unicode, ANSI, or JIS.

- Lui et al. (US 6,788,815 B2): A user interface allows a user to input handwritten, key-press, and spoken text in a seamless, synchronized manner. A text input panel accepts soft keyboard presses and handwritten words, characters, and gestures. A text recognizer/synchronizer integrates textual input from various sources while recognizing and preserving the order in which a user entered text via the soft keyboard via handwriting, and/or by speaking. Synchronized text may be displayed in a stage area of the text input panel before being passed to an operating system message router and/or an application program. While in handwriting recognition mode, various permutations and combinations of a word recognition area, a character recognition area, and a keybar/keypad may optionally be displayed.
- Kawamura et al. (US 2002/0071607 A1): A handwriting recognition apparatus is disclosed. In one embodiment the apparatus comprises an input device having a handwriting input area and configured to input a plurality of strokes constructing a plurality of characters written successively on the handwriting input area, and a recognition device configured to recognize the characters based on the strokes input by the input device, shapes of the strokes constructing two characters which are written successively and positional relations between or among the

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strokes constructing the two characters, whenever one stroke is input by the input device.

- Niemeier (US 5,574,482): A method of input programmed to operate on a representation of a keyboard appearing on a touch-sensitive screen in which letters are made temporarily available to the user based on studies of frequency of occurrence and sequence in the language that may then be selected for input by a sliding motion of an input device. The user slides an input device from the initially selected letter into the area representing any of the temporarily available keys, inputting any of the letters represented thereon. The process of selecting by touch and slide may be repeated as desired by the user. A method of capitalization is provided by touching the screen with an input device on the background area of the keyboard outside of the area representing the key or a letter and then sliding the input device into the area representing the key of the letter. A method of spacing is provided by a sliding movement of an input device from within the area representing the key of the last character before the desired space into the background area of the keyboard outside of the area of the key and then lifting the input device from the surface of the screen.
- Milewski et al. ("Medical Word Recognition Using a Computational Semantic Lexicon"): The purpose of the invention is to construct a hybrid semantic network and computational mind capable of taking related words from an NPL oracle machine and producing with higher confidence.

- Kristensson ("Design and Evaluation of a Shorthand Aided Soft Keyboard"): A major drawback of mobile computing is the lack of an efficient text entry method. Previous attempts of handwriting/ gesture recognition or stylus soft keyboards have been shown to be inefficient, inaccurate or very hard to learn. In this work, we utilize the ATOMIK alphabetically tuned and optimized stylus soft keyboard and introduce the concept of word-level shorthand strokes formed after the corresponding keys on the keyboard layout. Since the gestures are scale and partially location independent, they require little or no visual attention from the user. An implication of Zipf's law is that the most common words make up a large percent of the text mass - in the 100 million words large British National Corpus the 100 most common individual words make up 46% of the entire corpus. Hence the largest performance gain is acquired by introducing gestures for only a limited subset of the English language and utilizing the soft keyboard for the rest. A gesture recognition engine based on elastic matching was developed and a working prototype system was used in a longitudinal pilot study involving six subjects. The study showed that the users learned about 58 shorthand gestures on average after four sessions of 40 minutes practice. Their rate of learning was rather constant across sessions, acquiring about 15 new words in each session of practice.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN Wahnkyo LEE whose telephone number is

Art Unit: 2624

(571)272-9554. The examiner can normally be reached on Monday - Friday (Alt.) 7:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/CHARLES KIM/
Primary Examiner, Art Unit 2624

/John Wahnkyo Lee/
Examiner, Art Unit 2624